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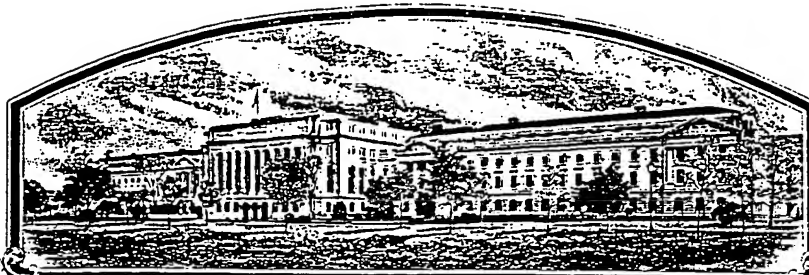
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No.

9700200



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Pioneer Hi-Bred International, Inc.

Whereas THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC FULFILLMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR PROPAGATING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE FOREGOING PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (34 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

CORN, FIELD

'PH0AV'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twenty-seventh day of October, in the year of our Lord two thousand.

Attest:

Acting Commissioner  
Plant Variety Protection Office

Todd Piper  
App. No. 10/769,212

Secretary of Agriculture

REF  
A15

REPRODUCE LOCALLY. Include form number and date on all reproductions.

FORM APPROVED - OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE DIVISION - PLANT VARIETY PROTECTION OFFICE

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a).

# APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE (Instructions and information collection burden statement on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2425).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate)		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
Pioneer Hi-Bred International, Inc.			PH0AV
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)		5. TELEPHONE (Include area code)	<b>FOR OFFICIAL USE ONLY</b> PVPO NUMBER: 9700200 DATE: MAR 12 1997 FILING AND EXAMINATION FEE: \$ 2,450.00 DATE: MAR 10 1997 CERTIFICATION FEE: \$ 320.00 DATE: 9/25/2000
Research and Product Development P.O. Box 85 Johnston, IA 50131-0085		515/270-3300  515/253-2125	
7. GENUS AND SPECIES NAME	8. FAMILY NAME (Botanical)		
Zea Mays	Gramineae		
9. CROP KIND NAME (Common name)			
Corn			
10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) (Common name)			
Corporation			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION		12. DATE OF INCORPORATION	
Iowa		May 6, 1926	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS			14. TELEPHONE (Include area code)
Alan R. Grunst Mr. Steven R. Anderson Research and Product Development P.O. Box 85 Johnston, IA 50131-0085			515/270-3328
			15. FAX (Include area code)
			515/253-2125
16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)			
<input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness <input checked="" type="checkbox"/> Exhibit C. Objective Description of the Variety <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Applicant's Ownership <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in a public repository) <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,460), made payable to "Treasurer of the United States" (Mail to PVPO)			
17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? (See Section 42(a) of the Plant Variety Protection Act)			
<input type="checkbox"/> YES if "yes," answer items 18 and 19 below <input checked="" type="checkbox"/> NO if "no," go to item 20			
18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?		19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?	
<input type="checkbox"/> YES <input type="checkbox"/> NO		<input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED	
20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES?			
<input type="checkbox"/> YES if "yes," give names of countries and dates <input checked="" type="checkbox"/> NO			
The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned applicant(s) declare the ownership of this actually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Applicant(s) declare that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF APPLICANT (Owner(s))		SIGNATURE OF APPLICANT (Owner(s))	
		Alan R. Grunst	
NAME (Please print or type)		NAME (Please print or type)	
Pioneer Hi-Bred International, Inc.		Alan R. Grunst	
CAPACITY OR TITLE	DATE	Signature & Self Application	DATE
		Coordinator	FEB 24 1997

## 14A. Exhibit A. Origin and Breeding History

Pedigree: PHJ89/PHNJ6)XA7K12W42WA2

Pioneer Line PH0AV, Zea mays L., a yellow corn inbred, was developed by Pioneer Hi-Bred International, Inc. from the single cross PHJ89 X PHNJ6\* using the pedigree method of breeding. The progenitors of PH0AV are proprietary inbred lines of Pioneer Hi-Bred International, Inc. Selfing and selection were practiced within the above F1 cross for 7 generations in the development of PH0AV at Willmar, Minnesota. During line development, crosses were made to inbred testers for the purpose of estimating the line's combining ability. Yield trials were grown at Willmar, Minnesota, as well as other Pioneer research stations. After initial testing, additional hybrid combinations have been evaluated and subsequent generations of the line have been grown and hand-pollinated with observations made for uniformity.

PH0AV has shown uniformity and stability for all traits as described in Exhibit C - "Objective Description of Variety". It has been self-pollinated and ear-rowed a sufficient number of generations with careful attention paid to uniformity of plant type to assure genetic homozygosity and phenotypic stability. The line has been increased both by hand and in isolated fields with continued observations for uniformity.

No variant traits have been observed or are expected in PH0AV.

The criteria used in the selection of PH0AV were yield, both per se and in hybrid combinations; kernel size, especially important in production; ability to germinate in adverse conditions; number of tillers, especially important in production because having numerous tillers increases hybrid production costs spent on detasseling; disease and insect resistance; pollen yield; tassel size and pollen shed duration.

\*

PHJ89 -Variety PHJ89 has a PVP Certificate Number 9100092.

PHNJ6 -Variety PHNJ6 was derived by pedigree selection from the single cross hybrid PHJ40 (PVP Certificate Number 8600133) x PHG47 (PVP Certificate Number 8600131).

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DEVELOPMENTAL HISTORY FOR PH0AV

<u>Season/Year</u>	<u>Inbreeding Level</u>
Winter 1990	F1
Summer 1991	F2*
Winter 1991	F3*
Summer 1992	F4*
Winter 1993	F5*
Summer 1994	F6*
Winter 1994	F7*
Summer 1995	F8**

\*PH0AV was selfed and selected through F7 generation.

\*\*PH0AV was selfed and ear-rowed for F8 generation.

**Exhibit B Novelty Statement**

The data in Table 1A and 1B are from paired comparisons collected primarily in Johnston, IA and Ankeny, IA in 1999. The data in table 2 were collected primarily in the adapted growing area of PH0AV in 1995 and 1996. The traits in Table 1A, 1B and 2 collectively show measurable differences between the two varieties.

PH0AV mostly resembles Pioneer Hi-Bred International, Inc. proprietary inbred line PHRE1 (PVP Certificate No. 9300114).

Variety PH0AV has narrower cob diameter than PHRE1 (19.3 mm vs 24.0 mm) (Table 1A, 1B).

Variety PH0AV has longer kernel length PHRE1 (11.5 mm vs 9.5 mm) (Table 1A, 1B).

Variety PH0AV reaches 50% pollen shed (GDUSHD) later (1243 GDU's vs 1176 GDU's) than PHRE1 (Table 2).

Variety PH0AV reaches 50% silk (GDUSLK) later (1243 GDU's vs 1182 GDU's) than PHRE1 (Table 2).

Variety PH0AV has taller plant height (PLTHT) (184.9 cm vs 155.7 cm) than PHRE1 (Table 2).

Variety PH0AV has higher ear height (EARHT) (77.5 cm vs 65.0 cm) than PHRE1 (Table 2).

# Exhibit B Novelty Statement Tables

Table 1A. Data from Johnston, IA and Ankeny, IA in 1999 are supporting evidence for differences between PH0AV and PHRE1. Locations had different environmental conditions. Results are from a t-test comparing differences between means in a paired comparison.

Trait	year	station	variety	Count	Mean	Mean	Mean	Mean	Std	Std	Std	Std	DF	t-Value	Prob_(2-tail)
				1	2	1	2	Diff	Dev-1	Dev-2	Error-1	Error-2	Pooled	Pooled	Pooled
cob diameter (mm)	1999 AD	PH0AV	PHRE1	5	19.4	23.8	-4.4	0.548	0.837	0.245	0.374	0.374	8	-9.84	0.000
cob diameter (mm)	1999 IT	PH0AV	PHRE1	5	18.8	25.8	-7.0	0.447	0.837	0.200	0.374	0.374	8	-16.50	0.000
cob diameter (mm)	1999 JH	PH0AV	PHRE1	5	19.6	22.4	-2.8	0.548	1.342	0.245	0.600	0.600	8	-4.32	0.003
kernel length (mm)	1999 AD	PH0AV	PHRE1	5	12.0	10.2	1.8	0.707	0.447	0.316	0.200	0.200	8	4.81	0.001
kernel length (mm)	1999 IT	PH0AV	PHRE1	5	11.0	9.8	1.4	0.707	0.548	0.316	0.245	0.245	8	3.50	0.008
kernel length (mm)	1999 JH	PH0AV	PHRE1	5	11.4	8.8	2.6	0.548	0.447	0.245	0.200	0.200	8	8.22	0.000

Table 1B. Summary data from Johnston, IA and Ankeny, IA across environments in 1999 are supporting evidence for differences between PH0AV and PHRE1. Locations had different environmental conditions and different environmental conditions. Results are from a balanced t-test comparing differences between means in 1999.

Trait	variety-1	variety-2	Count-1	Count-2	Mean-1	Mean-2	Mean-Diff	Std Dev-1	Std Dev-2	Std Error-1	Std Error-2	DF-Pooled	t-Value-Pooled	Prob_ (2-tail)-Pooled
cob diameter (mm)	PH0AV	PHRE1	15	15	19.3	24.0	-4.7	0.594	1.732	0.153	0.447	28	-10.01	0.000
kernel length (mm)	PH0AV	PHRE1	15	15	11.5	9.5	1.9	0.743	0.743	0.192	0.192	28	7.12	0.000

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## Exhibit B Novelty Statement Tables

Table 2. Summary data from Johnston, IA across environments in 1995, 1996, and are supporting evidence for differences between PH0AV and PHRE1. Results are from a paired comparison t-test.

Variety 1:	PH0AV				
Variety 2:	PHRE1				
		GDU	GDU	PLT	EAR
	VAR	SHD	SLK	HT	HT
YEAR	#	ABS	ABS	ABS	ABS
1995	1	1255	1252	188.7	82.0
	2	1173	1182	157.7	68.3
	LOCS	42	42	15	13
t-test	PROB	.000#	.000#	.000#	.003#
1996	1	1233	1235	181.4	71.4
	2	1178	1182	153.4	60.5
	LOCS	46	46	15	10
t-test	PROB	.000#	.000#	.000#	.041+
TOTAL SUM	1	1243	1243	184.9	77.5
	2	1176	1182	155.7	65.0
	LOCS	88	88	30	23
	DIFF	67	61	29.2	12.5
t-test	PROB	.000#	.000#	.000#	.000#



Exhibit C  
(Corn: Maize)

### Objective Description of Variety Corn (*Zea mays* L.)

Name of Applicant (s) <b>Pioneer Hi-Bred International, Inc.</b>		Variety Seed Source	Variety Name or Temporary Designation <b>PHOAV</b>
Address (Street & No., or RFD No., City, State, ZipCode and Country) <b>7301 NW 62<sup>nd</sup> Avenue, P.O. Box 85, Johnston, Iowa 50131-0085</b>		FOR OFFICIAL USE	PVP0 Number <b>9700200</b>
Place the appropriate number that describes the varietal characters typical of this inbred variety in the spaces below. Right justify whole numbers by adding leading zeroes if necessary. Completeness should be striven for to establish an adequate variety description. Traits designated by an '*' are considered necessary for an adequate variety description and must be completed.			
COLOR CHOICES (Use in conjunction with Munsell color code to describe all color choices: describe #25 and #26 in Comments section):			
01=Light Green	06=Pale Yellow	11=Pink	16=Pale Purple
02=Medium Green	07=Yellow	12=Light Red	17=Purple
03=Dark Green	08=Yellow Orange	13=Cherry Red	18=Colorless
04=Very Dark Green	09=Salmon	14=Red	19=White
05=Green-Yellow	10=Pink-Orange	15=Red & White	20=White Capped
			21=Buff
			22=Tan
			23=Brown
			24=Bronze
			25=Variegated (Describe)
			26=Other (Describe)
STANDARD INBRED CHOICES			
(Use the most similar (in background and maturity) of these to make comparisons based on grow-out trial data):			
Yellow Dent Families:		Yellow Dent (Unrelated):	
Family	Members	Sweet Corn:	
B14	CM105, A632, B64, B68	C13, Iowa5125, P39, 2132	
B37	B37, B76, H84	Oh7, T232,	
B73	N192, A679, B73, NC268	W117, W153R,	
C103	Mo17, Va102, Va35, A682	W18BN	
Oh43	A619, MS71, H99, Va26	Popcorn:	
W64A	W64A, A554, A654, Pa91	SG1533, 4722, HP301, HP7211	
		Pipecorn:	
		Mo15W, Mo16W, Mo24W	
		White Dent:	
		C166, H105, Ky228	

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EXHIBIT C: PH0AV

1. TYPE: (describe intermediate types in Comments section):			Standard Inbred Name		
2 1=Sweet 2=Dent 3=Flint 4=Flour 5=Pop 6=Ornamental			H99		
2. REGION WHERE DEVELOPED IN THE U.S.A.:			Standard Seed Source		
2 1=Northwest 2=Northcentral 3=Northeast 4=Southeast 5=Southcentral 6=Southwest 7=Other			AMES 15931		
3. MATURITY (In Region of Best Adaptability; show Heat Unit formula in 'Comments' section)			DAYS HEAT UNITS		
DAYS HEAT UNITS					
064	1,247.0	From emergence to 50% of plants in silk	068	1,344.5	
064	1,240.8	From emergence to 50% of plants in pollen	068	1,343.3	
004	0,093.5	From 10% to 90% pollen shed	005	0,122.0	
		From 50% silk to optimum edible quality			
066	1,310.8	From 50% silk to harvest at 25% moisture	071	1,300.5	
4. PLANT:			Standard Sample		
		Standard Deviation		Standard Deviation	Sample Size
176.0	cm Plant Height (to tassel tip)	04.90	04	135.3	05.50 04
068.8	cm Ear Height (to base of top ear node)	05.85	04	040.8	06.90 04
011.6	cm Length of Top Ear Internode	00.91	04	009.7	00.87 04
0.00	Average Number of Tillers	00.00	04	0.00	00.00 04
1.0	Average Number of Ears per Stalk	00.00	04	1.0	00.00 04
2	Anthocyanin of Brace Roots: 1=Absent 2=Faint 3=Moderate 4=Dark			2	
5. LEAF:			Standard Sample		
		Standard Deviation		Standard Deviation	Sample Size
06.9	cm Width of Ear Node Leaf	00.62	04	06.8	00.84 04
62.8	cm Length of Ear Node Leaf	08.42	04	64.2	00.83 04
05	Number of leaves above top ear	00.50	04	06	00.52 04
30	Degrees Leaf Angle (measure from 2nd leaf above ear at anthesis to stalk above leaf)	09.80	04	44	04.11 04
03	Leaf Color (Munsell code)	5GY34		03	5GY34
1	Leaf Sheath Pubescence (Rate on scale from 1=none to 9=like peach fuzz)			1	
7	Marginal Waves (Rate on scale from 1=none to 9=many)			7	
4	Longitudinal Creases (Rate on scale from 1=none to 9=many)			6	
6. TASSEL:			Standard Sample		
		Standard Deviation		Standard Deviation	Sample Size
04	Number of Primary Lateral Branches	01.60	04	05	02.92 04
39	Branch Angle from Central Spike	07.23	04	48	11.93 04
45.8	cm Tassel Length (from top leaf collar to tassel tip)	03.98	04	45.4	05.74 04
8	Pollen Shed (rate on scale from 0=male sterile to 9=heavy shed)			8	
07	Anther Color (Munsell code)	10Y8.58		14	2.5R46
01	Glume Color (Munsell code)	5GY66		01	5GY58
1	Bar Glumes (Glume Bands): 1=Absent 2=Present			2	
Application Variety Data			Standard Inbred Data		

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Application Variety Data		PH0AV	Page 2	Standard Inbred Data	
7a. EAR (Unhusked Data):					
<u>01</u>	Silk Color (3 days after emergence) (Munsell code)	<u>2.5GY88</u>		<u>07</u>	<u>2.5GY96</u>
<u>02</u>	Fresh Husk Color (25 days after 50% silking) (Munsell code)	<u>5GY66</u>		<u>01</u>	<u>5GY78</u>
<u>21</u>	Dry Husk Color (65 days after 50% silking) (Munsell code)	<u>2.5Y8.54</u>		<u>21</u>	<u>2.5Y84</u>
<u>2</u>	Position of Ear at Dry Husk Stage: 1= Upright 2= Horizontal 3= Pendant			<u>2</u>	
<u>4</u>	Husk Tightness (Rate of Scale from 1=very loose to 9=very tight)			<u>7</u>	
<u>2</u>	Husk Extension (at harvest): 1=Short (ears exposed) 2=Medium (<8 cm)			<u>2</u>	
	3=Long (8-10 cm beyond ear tip) 4=Very Long (>10 cm)				
7b. EAR (Husked Ear Data):				Standard	Sample
		Deviation	Size	Deviation	Size
<u>13.1</u>	cm Ear Length	<u>00.57</u>	<u>04</u>	<u>12.8</u>	<u>02.65</u> <u>04</u>
<u>36.1</u>	mm Ear Diameter at mid-point	<u>01.33</u>	<u>04</u>	<u>36.5</u>	<u>01.29</u> <u>04</u>
<u>080.8</u>	gm Ear Weight	<u>10.23</u>	<u>04</u>	<u>63.5</u>	<u>10.41</u> <u>04</u>
<u>13</u>	Number of Kernel Rows	<u>00.55</u>	<u>04</u>	<u>11.4</u>	<u>00.64</u> <u>04</u>
<u>2</u>	Kernel Rows: 1=Indistinct 2=Distinct			<u>2</u>	
<u>1</u>	Row Alignment: 1=Straight 2=Slightly Curved 3=Spiral			<u>1</u>	
<u>11.2</u>	cm Shank Length	<u>02.01</u>	<u>04</u>	<u>08.4</u>	<u>00.64</u> <u>04</u>
<u>2</u>	Ear Taper: 1=Slight 2= Average 3=Extreme			<u>2</u>	
8. KERNEL (Dried)				Standard	Sample
		Deviation	Size	Deviation	Size
<u>10.9</u>	mm Kernel Length	<u>00.30</u>	<u>04</u>	<u>09.1</u>	<u>00.25</u> <u>04</u>
<u>07.3</u>	mm Kernel Width	<u>00.47</u>	<u>04</u>	<u>08.7</u>	<u>00.38</u> <u>04</u>
<u>04.3</u>	mm Kernel Thickness	<u>00.47</u>	<u>04</u>	<u>04.9</u>	<u>00.12</u> <u>04</u>
<u>14.4</u>	% Round Kernels (Shape Grade)	<u>05.97</u>	<u>04</u>	<u>43.1</u>	<u>07.01</u> <u>04</u>
<u>1</u>	Aleurone Color Pattern: 1-Homozygous 2=Segregating			<u>1</u>	
<u>07</u>	Aleurone Color (Munsell code)	<u>2.5Y812</u>		<u>07</u>	<u>10YR314</u>
<u>07</u>	Hard Endosperm Color (Munsell code)	<u>10YR712</u>		<u>07</u>	<u>2.5Y812</u>
<u>03</u>	Endosperm Type:			<u>3</u>	
	1=Sweet (Su1) 2=Extra Sweet (sh2) 3=Normal Starch				
	4=High Amylose Starch 5=Waxy Starch 6=High Protein				
	7=High Lysine 8=Super Sweet (se) 9=High Oil				
	10=Other				
<u>23.3</u>	gm Weight per 100 Kernels (unsized sample)	<u>02.06</u>	<u>04</u>	<u>28.00</u>	<u>02.83</u> <u>04</u>
9. COB:				Standard	Sample
		Deviation	Size	Deviation	Size
<u>17.9</u>	mm Cob Diameter at mid-point	<u>00.99</u>	<u>04</u>	<u>23.1</u>	<u>01.01</u> <u>04</u>
<u>14</u>	Cob Color (Munsell code)	<u>10R56</u>		<u>19</u>	<u>2.5Y92</u>

10. DISEASE RESISTANCE (Rate from 1 (most susceptible) to 9 (most resistant); leave blank if not tested; leave Race or Strain Options blank if polygenic):

A. Leaf Blights, Wilts, and Local Infection Diseases

	Anthrachnose Leaf Blight ( <i>Colletotrichum graminicola</i> )	
	Common Rust ( <i>Puccinia sorghi</i> )	
	Common Smut ( <i>Ustilago maydis</i> )	
	Eyespot ( <i>Kabatiella zeae</i> )	
	Goss's Wilt ( <i>Clavibacter michiganense</i> spp. <i>nebraskense</i> )	
4	Gray Leaf Spot ( <i>Cercospora zeae-maydis</i> )	3
	Helminthosporium Leaf Spot ( <i>Bipolaris zeicola</i> ) Race _____	
8	Northern Leaf Blight ( <i>Exserohilum turcicum</i> ) Race _____	8
	Southern Leaf Blight ( <i>Bipolaris maydis</i> ) Race _____	
	Southern Rust ( <i>Puccinia polysora</i> )	
1	Stewart's Wilt ( <i>Erwinia stewartii</i> )	1
	Other (Specify) _____	

B. Systemic Diseases

Corn Lethal Necrosis (MCMV and MDMV)  
 Head Smut (*Sphacelotheca reiliana*)  
 Maize Chlorotic Dwarf Virus (MDV)  
 Maize Chlorotic Mottle Virus (MCMV)  
 Maize Dwarf Mosaic Virus (MDMV)  
 Sorghum Downy Mildew of Corn (*Peronosclerospora sorghi*)  
 Other (Specify) \_\_\_\_\_

C. Stalk Rots

Anthrachnose Stalk Rot (*Colletotrichum graminicola*)  
 Diplodia Stalk Rot (*Stenocarpella maydis*)  
 Fusarium Stalk Rot (*Fusarium moniliforme*)  
 Gibberella Stalk Rot (*Gibberella zeae*)  
 Other (Specify) \_\_\_\_\_

D. Ear and Kernel Rots

Aspergillus Ear and Kernel Rot (*Aspergillus flavus*)  
 Diplodia Ear Rot (*Stenocarpella maydis*)  
 Fusarium Ear and Kernel Rot (*Fusarium moniliforme*)  
 Gibberella Ear Rot (*Gibberella zeae*)  
 Other (Specify) \_\_\_\_\_

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Application Variety Data

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## 11. INSECT RESISTANCE (Rate from 1 (most susceptible) to 9 (most resistant); (leave blank if not tested) :

	Banks grass Mite ( <i>Oligonychus pratensis</i> ) Corn Worm ( <i>Helicoverpa zea</i> ) Leaf Feeding Silk Feeding mg larval wt. Ear Damage Corn Leaf Aphid ( <i>Rhopalosiphum maidis</i> ) Corn Sap Beetle ( <i>Carpophilus dimidiatus</i> ) European Corn Borer ( <i>Ostrinia nubilalis</i> ) 1st Generation (Typically Whorl Leaf Feeding) 2nd Generation (Typically Leaf Sheath-Collar Feeding) Stalk Tunneling cm tunneled/plant Fall Armyworm ( <i>Spodoptera frugiperda</i> ) Leaf Feeding Silk Feeding mg larval wt. Maize Weevil ( <i>Sitophilus zeamais</i> ) Northern Rootworm ( <i>Diabrotica barberi</i> ) Southern Rootworm ( <i>Diabrotica undecimpunctata</i> ) Southwestern Corn Borer ( <i>Diatraea grandiosella</i> ) Leaf Feeding Stalk Tunneling cm tunneled/plant Two-spotted Spider Mite ( <i>Tetranychus urticae</i> ) Western Rootworm ( <i>Diabrotica virgifera virgifera</i> ) Other (Specify) _____	6
4	Staygreen (at 65 days after anthesis) (Rate on a scale from 1=worst to excellent)	3
0.5	% Dropped Ears (at 65 days after anthesis)	0.0
	% Pre-anthesis Brittle Snapping	
	% Pre-anthesis Root Lodging	
6.3	Post-anthesis Root Lodging (at 65 days after anthesis)	0.0
2,258.6	Kg/ha Yield of Inbred Per Se (at 12-13% grain moisture)	1,397.1

## 13. MOLECULAR MARKERS: (0=data unavailable; 1=data available but not supplied; 2=data supplied):

1 Isozymes                      0 RFLP's                      0 RAPD's

COMMENTS (eg. state how heat units were calculated, standard inbred seed source, and/or where data was collected. Continue in Exhibit D):

Application Variety Data

Page 4

Standard Inbred Data

## CLARIFICATION OF DATA IN EXHIBITS C AND D

Please note the data presented in Exhibit C, "Objective Description of Variety," is data collected primarily at Johnston, Iowa plus description information from the maintaining station. The data in Exhibit D, "Additional Description of Variety," is data from comparisons of inbreds grown in the same tests in the adapted growing area of PH0AV.

45  
8/00

8) There are environmental factors that differ from year to year. In 1995, May was wet and August was warmer. In 1996, May was very wet and August was cool with very little heat or drought stress compared to most years. Environmental temperature and precipitation differences during the vegetative and grain fill periods can impact plant and grain traits and be a source of variability. Please see table 3, which summarizes rainfall and growing season temperatures from 1994-1997. The environmental conditions described above could result in larger standard deviations. The variation associated with year to year factors is normally higher than the variation associated with location to location in a given year.

Table 3. Average temperatures (Fahrenheit) and rainfall (inches) for central Iowa.

## TEMPERATURE

YEAR	MAY	JUN	JULY	AUG	AVERAG E
1994	59.8	70.7	71.9	69.0	67.9
1995	56.2	69.4	74.3	76.9	69.2
1996	56.2	69.3	71.3	70.5	66.8
1997	53.5	70.6	74.1	69.6	67.0
AVG	56.4	70.0	72.9	71.5	67.7

## RAINFALL

YEAR	MAY	JUN	JULY	AUG	Total
1994	3.67	5.75	1.71	4.18	15.31
1995	5.04	4.19	2.94	2.87	15.04
1996	8.47	4.35	2.51	2.14	17.47
1997	4.32	3.27	4.10	1.36	13.05
AVG	5.38	4.39	2.82	2.64	15.22

EXHIBIT D. ADDITIONAL DESCRIPTION OF PHOAV  
INBRED PER SE YIELD TEST COMPARISON OF PHOAV AND PHRE1 EVALUATED OVER YEARS

VARIETY #1 = PHOAV  
VARIETY #2 = PHRE1

		* = 10% SIG + = 5% SIG # = 1% SIG																							
				BU	ACR	BU	ACR	BU	ACR	BU	ACR	BU	ACR	BU	ACR	BU	ACR	BU	ACR	BU	ACR	BU	ACR	BU	ACR
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\*PR > T values are valid only for comparisons with LOCS >= 10.



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FORM APPROVED - OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

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Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2425).

**EXHIBIT E**  
**STATEMENT OF THE BASIS OF OWNERSHIP**

1. NAME OF APPLICANT(S) <b>PIONEER HI-BRED INTERNATIONAL, INC.</b>	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME <b>PH0AV</b>
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) <b>7301 NW 62<sup>nd</sup> AVENUE P.O. BOX 85 JOHNSTON, IA 50131-0085</b>	5. TELEPHONE (include area code) <b>515-270-4051</b>	6. FAX (include area code) <b>515-253-2125</b>
7. PVPO NUMBER <b>9700200</b>		

8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain: ☒ YES ☐ NO

9. Is the applicant (individual or company) a U.S. national or U.S. based company? ☒ YES ☐ NO

If no, give name of country

10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. national(s)?

☐ YES ☐ NO If no, give name of country

b. If original rights to variety were owned by a company(ies), is(are) the original owner(s) a U.S. based company?

☒ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (if needed, use reverse for extra space):

PH0AV is owned by Pioneer Hi-Bred International, Inc.

**PLEASE NOTE:**

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See section 41(a)(2) of the Plant Variety Protection Act for definition.

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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